HOOD CANAL BRIDGE NEWS

Washington State Department of Transportation

Retrofit and East-Half Replacement Project

December 2003

Anchor cables: Keeping the HCB in place

While much of the publicity has focused on rehabilitating the floating portion of the Hood Canal Bridge, the three-inch cables that stop the bridge from floating into the Pacific Ocean recently received much-needed attention.

Floating bridges function like a ship. The roadway is built upon a series of concrete pontoons that float, despite their enormous size and weight.

The Hood Canal Bridge's series of pontoons are attached or 'anchored' to land by 685- to 1,875-ton anchors. Attached to these anchors are individual wire strands that intertwine, twist and wrap to become three-inch diameter anchor cables designed to hold 538 tons.

"These cables are 'double-anchored,' like a bridle on a horse," explained WSDOT bridge engineer Patrick Clarke. "We start at the pontoon's anchor gallery with a speltor socket, go out through the side of the pontoon at a 14 ½-degree angle, reach the anchor, go around and then back up."

In layman's terms, these cables stop the Hood Canal Bridge from floating away.

The Washington State Department of Transportation completed a $600,000 project this fall to replace close to 5,500 feet of anchor cable. During the entire bridge rehabilitation process, WSDOT will replace nearly 13 miles of cable. Each year, the WSDOT sends in engineers, divers and underwater cameras to inspect the cables on each of the state's floating bridges. These studies look for corrosion, wire breakage and other signs of wear and tear.

Ron Lewis, WSDOT project manager for the Hood Canal Bridge rehabilitation, described the cables' corrosion to something much smaller, but in many ways, just as vital – a shoelace.

"As it becomes frayed, it can still do its job to a point," Lewis said. "But, eventually you will have some breakage."

It was the fraying of Hood Canal Bridge cables C-north and D-south that engineers felt needed attention. Beginning from the western span, the cables are designated based on the pontoon they protect. Within each pontoon is an anchor gallery, where the cables' tension is monitored, and if needed adjusted.

A worker uncoils a portion of the cable that will become a portion of the Hood Canal Bridge's anchor cable. The WSDOT completed a $600,000 project this fall to replace close to 5,500 feet of anchor cable.

During the C-north and D-south replacement and throughout the entire bridge rehabilitation process, WSDOT engineers continue their fight against Mother Nature's corrosive personality.

"Much of the corrosion is caused by a

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Hood Canal Bridge News
is prepared monthly by the WSDOT as a service to those interested in the Hood Canal Bridge retrofit and replacement project.

Traffic information Hood Canal Bridge:
1-800-419-9085.
Weather and roadway conditions:
www.wsdot.wa.gov/traffic.

If you have any comments on ***Hood Canal Bridge News*** or would like more information contact Lloyd Brown, communication manager, at (360) 357-2789 or via E-mail: brownl@wsdot.wa.gov.

For more project information, contact:
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www.hoodcanalbridge.com

Graving Dock Update: MOA in works

WSDOT continued a consultation process it started with the Lower Elwha Klallam Tribe following the discovery of archeological items at the Port Angeles graving yard site in August 2003.

The two groups are crafting a memorandum of agreement and supporting appendices outlining how major construction can resume at the site.

Other parties involved include the Federal Highway Administration and the State Historic Preservation Office.

Meanwhile, construction crews are installing a surface water retention and treatment system to better manage runoff away from excavation areas.

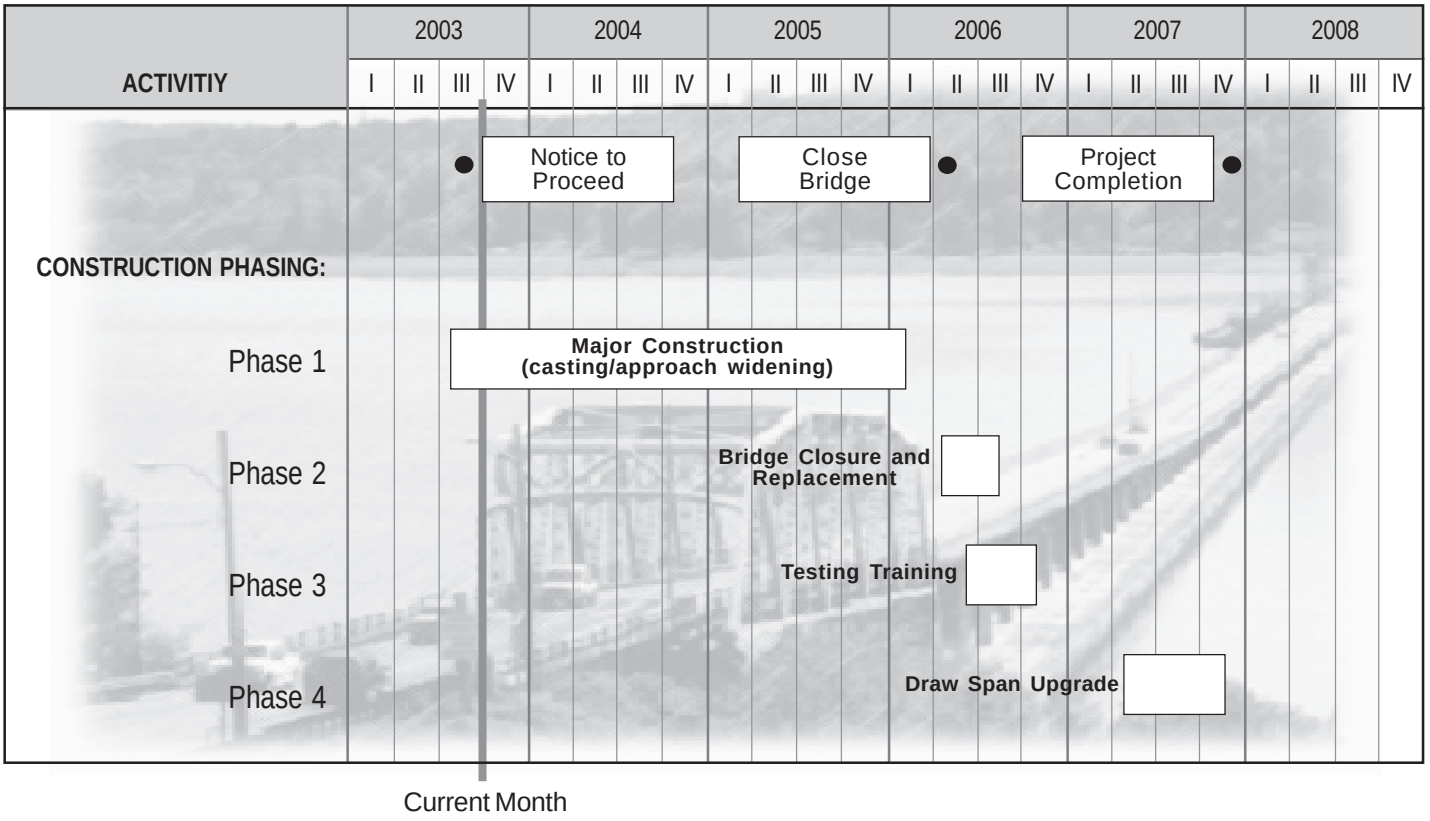
Representatives of the Lower Elwha Klallam Tribe and archeologists are on-site inspecting the drainage installation.

The project has allowed WSDOT and the contractor to demonstrate construction methods that could be utilized when work resumes in 2004.

For more project information, contact Ron Lewis, project manager, at (360) 357-2614.

In the next issue:

- Weather and the Bridge: ***Your*** Commute



Cables

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naturally-occurring electric current (electrolysis) from the movement of the salt water," Clarke said. "We counteract the chemistry and physics corroding the cables by inducing a man-made current in the opposite direction."

The man-made, low-voltage current of cathodic protection occurs in the anchor galleries, which all have rectifiers.

These boxes of anodes aren't 100-percent foolproof, Clarke said, but they significantly extend the life of the cables.

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Fish wranglers at work on HCB

In what could be precedent-setting research to protect wildlife in aquatic construction areas, Washington State Department of Transportation will soon start a roundup.

WSDOT and environmental contractors are protecting marbled murrelets, a bird on the endangered species list.

In mid-November, the project contractor began trestle construction phase of the Hood Canal Bridge project.

This trestle construction makes waves, specifically underwater sound, or pressure waves, from the pile driving. During pile driving operations two boats measured underwater sound impacts, while an additional crew wrangled the marble murrelets. Crews also monitored light under the new work trestle.

Once researchers compile the data, WSDOT will publish their findings.

"The Hood Canal Bridge's east approach is prime marbled murrelet habitat," said John Callahan, WSDOT assistant project engineer. "These are seabirds on the endangered species list. Our wranglers will prevent the birds from getting too close to the pile-driving operation and being harmed."

Callahan said WSDOT may also gain vital measurement of shading caused by structures and its effect on migrating juvenile fish.

"Fish ocular nerves react differently than people," Callahan said. "We have a mechanical iris while fish use chemical methods which don't react as quickly.

"The fish perceive the shade as an obstacle and place themselves in greater predatory harm when trying to move into deeper water around the shadows," Callahan continued. "The consultant will measure the shade as well as documenting our method of mitigating the shadows, such as painting the underside of the work trestle white or placing active lights."

The venture remains an example of how government agencies and private enterprise can work together to protect fish and wildlife and provide the most cost-effective options for state residents.

"The knowledge base is sparse," Callahan said. "And, we are fortunate to have many other research opportunities spawned by the trestle work."

Presentations available

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